



## The minute, fungus-feeding species of *Sophiothrips* (Thysanoptera, Phlaeothripinae) from Australia and New Zealand

LAURENCE A. MOUND<sup>1</sup> & DESLEY J. TREE<sup>2</sup>

<sup>1</sup>Australian National Insect Collection, CSIRO, PO Box 1700, Canberra, ACT 2601. E-mail: [laurence.mound@csiro.au](mailto:laurence.mound@csiro.au)

<sup>2</sup>Queensland Primary Industries Insect Collection (QDPC), Department of Agriculture, Fisheries and Forestry, Queensland, Ecosciences Precinct, GPO Box 267, Brisbane, Qld, 4001. E-mail: [Desley.Tree@daff.qld.gov.au](mailto:Desley.Tree@daff.qld.gov.au)

### Abstract

Five new species of *Sophiothrips* are described from mainland Australia, of which one is widespread in the eastern part of the continent, with a second widespread across the northern tropical zone. These species appear to be members of the *breviceps* species-group from the Old World tropics. One of these five is particularly unusual within the genus in that the maxillary stylets are retracted into the head anterior to the postoccipital ridge. A sixth new species is described from Australia that is known only from Norfolk Island, but this is closely related to two species that are endemic to New Zealand. A key is provided to the nine species recognised.

**Key words:** *Sophiothrips*, fungus-feeding, short maxillary stylets

### Introduction

The genus *Sophiothrips* currently comprises 25 species of particularly small, fungus-feeding thrips that form colonies on dead woody twigs. Most known individuals are wingless, and many species exhibit remarkable intra-specific variation in structure, between sexes, between apterae and macropterae, and between large and small males (Mound 1977). This genetically determined structural polymorphism, together with the extensive polyphenism that is associated with body size, is similar to the variation found among species of the worldwide genus *Hoplothrips*. However, species of *Sophiothrips* are distinguished by their unusually short maxillary stylets that are usually not retracted anterior to the postoccipital ridge of the head; that is, in dorsal view the stylets are not visible within the head capsule but are restricted to the mouth cone.

The genus is represented in all of the warm temperate and tropical parts of the world, with five species each from the Neotropical and the Nearctic regions, seven from Asia, four from Africa, three from Australia or New Zealand, and one from southern Europe (ThripsWiki 2014). Two species are presumably endemic to New Zealand (Mound & Walker 1982), and these share with six Neotropical species the condition of having two sensoria on the third antennal segment. In contrast to this southern hemisphere group, the other members of the genus have only a single sensorium on the third antennal segment and are found across the Holarctic and the Old World tropics. Most of these species are considered to be members of the *breviceps* species-group (Mound & Walker 1982), as are five of the new species from Australia described below. A third species that has been recorded from New Zealand, is here recognised as widespread across Australia, and the objective here is to describe a further six new species from this country. One of these is known only from Norfolk Island where it is quite common, and this is closely related to the two endemic New Zealand species. One of the new species is known only from a single sample taken near Canberra, but is particularly interesting because it has longer maxillary stylets than any other member of this genus. One of the new species is widespread across northern Australia, but another of the new species is known only from a single specimen that has a larger tube than any other member of the genus.

Holotypes of the new species described below are in the Australian National Insect Collection, Canberra, with some paratypes in the Queensland Primary Industries Insect Collection, Brisbane. Abbreviations are as follows:

Pronotal setae: am—anteromarginal, aa—anteroangular, ml—midlateral, epim—epimeral, pa—posteroangular. Tergite IX setae S1—median dorsal pair; iS—intermediate seta between S1 and S2.

## *Sophiothrips* Hood

*Sophiothrips* Hood, 1934: 425. Type species *Sophiothrips squamosus* Hood by original designation.

A further four genera are currently listed as synonyms of *Sophiothrips* (ThripsWiki 2014), primarily because of the remarkable structural variation that occurs within some of the species, and a full diagnosis of the genus is available in Okajima (2006) and also Dang *et al.* (2014).

**Diagnosis.** Head broader than long, setae small; mouth-cone rounded, stylets short, V-shaped, restricted to mouth-cone; antennae 8-segmented, VIII not constricted basally, III with 1 or 2 sensoria, IV with 2; pronotal setae not elongate, notopleural sutures usually complete; basantra small or absent; mesopresternum narrow or reduced; sternopleural sutures present; fore tarsal tooth present in male, present or absent in female; fore wings, if present, parallel-sided without duplicated cilia; pelta broad; tergites II–VII with 1 pair of wing-retaining setae; tube and anal setae short; male sternite VIII without pore plate.

## Key to *Sophiothrips* from Australia and New Zealand

1. Antennal segment III with 2 sensoria . . . . . 2
- . Antennal segment III with one sensorium. . . . . 4
2. Body largely yellow, with dark brown areas on head and pronotum (Fig. 4); tube and abdominal segments VIII–IX equally yellow; Norfolk Island. . . . . *martinae* sp.n.
- . Body uniformly dark brown, yellow tube contrasting sharply with dark brown abdominal segments VIII–IX; New Zealand. . . . . 3
3. Pelta of apterae transversely rectangular with posterior margin entire; antennal segment IV sensoria longer than maximum width of segment; male tergite IX with small tubercle scarcely extending beyond posterior margin . . . . . *aleurodisci*
- . Pelta of apterae anterior margin broadly convex, posterior margin eroded medially; antennal segment IV sensoria shorter than maximum width of segment; male tergite IX with pointed tubercle extending well beyond posterior margin . . . . . *duvali*
4. Fore tarsal tooth absent on female (also male where known); metanotum without a pair of prominent setae; antennal segment VII about 1.5 times as long as VIII (Figs 8, 10, 13); sternites II–III posteromarginal setae much shorter than length of sternite. . . . . 5
- . Fore tarsal tooth present on female (also male where known); metanotum with pair of prominent setae; antennal segments VII and VIII subequal in length (Figs 9, 11, 12); sternites II–III posteromarginal setae longer than median length of sternite. . . . . 7
5. Maxillary stylets retracted into head anterior to postoccipital ridge (Fig. 1); antennal segment III basal stem no longer than wide (Fig. 8); pronotal pa setae small and capitate; mesoeusternal anterior margin deeply eroded (Fig. 20); tergite IX setae small and capitate; sternite VIII with one pair of posteromarginal setae stout and capitate. . . . . *canberrae* sp.n.
- . Maxillary stylets not retracted anterior to postoccipital ridge; antennal segment III basal stem long and slender, sub-equal in length to apical swollen part (Fig. 10); pronotal pa setae minute and acute; mesoeusternal anterior margin entire (Fig. 19); tergite IX setae acute; sternite VIII with posteromarginal setae slender and acute. . . . . 6
6. Tergite IX setae about as long as basal width of tube (Fig. 24); pronotal epim setae about as long as width of antennal segment III; paired setae on antennal segment II bluntly pointed to weakly capitate (Fig. 10); tube with weak longitudinal furrows (Fig. 24); sternite VIII posteromarginal setae at least 4 times as long as discal setae. . . . . *greensladei*
- . Tergite IX setae less than 0.5 as long as basal width of tube (Fig. 27); pronotal epim setae about 0.5 as long as width of antennal segment III; paired setae on antennal segment II broadly flattened (Fig. 13); tube weakly reticulate; sternite VIII posteromarginal setae minute, less than 15 microns long, scarcely longer than discal setae. . . . . *postlei* sp.n.
7. Pedicel of antennal segment III with large flattened band and sharp edged ring, more than 0.5 as wide as maximum width of segment (Fig. 12). . . . . *placodes* sp.n.
- . Pedicel of antennal segment III without such a large flattened band . . . . . 8
8. Abdomen sharply bicoloured, segments II and VIII–IX yellow in contrast to brown of other segments; antennal segment III with distinct sub-basal ring (Fig. 9); tube tapering to apex, surface with little sculpture (Fig. 23) . . . . . *darwini* sp.n.
- . Abdomen not sharply bicoloured, but II–IV paler than dark brown VII–IX; antennal segment III without a sub-basal ring; tube almost parallel sided, sharply constricted at apex, surface distinctly sculptured (Fig. 25). . . . . *mongae* sp.n.

## *Sophiothrips aleurodisci* Mound & Walker, 1982

This uniformly brown species is known only from New Zealand, where it is widespread in native forest in both

North and South Islands. Large males have a tubercle ventrally on the head, and often have a small tubercle dorsally on tergite IX. This thrips has been taken from dead branches in association with a small pink coral-spot fungus of the genus *Aleurodiscus*.

***Sophiothrips canberra* sp.n.**

(Figs 1, 8, 14, 20)

*Female macroptera*: Body legs and antennae light brown, tarsi and apices of tibiae yellow, tube golden with brown margins, basal antennal segments paler than distal segments.

Head wider than long, with little sculpture dorsally except near posterior margin; postocular setae short, capitate, placed laterally, only one pair of minor postocular setae medially; maxillary stylets wide apart, retracted slightly into head capsule (Fig. 1). Antennal segment III with one sensorium, IV–V each with 2 short stout sensoria, VI shorter than VII (Fig. 8). Pronotum smooth, notopleural sutures irregular, slightly incomplete; epim and pa setae small and capitate, remaining major setae minute. Fore tarsi without tooth. Mesonotal lateral setae minute, metanotum weakly reticulate. Fore wing parallel sided, no duplicated cilia, only one small capitate sub-basal seta. Prosternal basantra absent, ferna wide apart, mesopresternum and mesoeusternum eroded medially, but mesopresternum fused to mesoeusternum laterally (Fig. 20); metathoracic sternopleural sutures present. Pelta weakly reticulate, with lateral lobes, campaniform sensilla present (Fig. 14); tergites II–VII each with one pair of sigmoid wing-retaining setae and one pair of capitate setae lateral to these; tergite IX major setae all capitate; tube margins slightly concave, apex constricted, anal setae short. Sternites with transverse row of 8–10 small discal setae, posterior margins of II–VII each with 2 pairs of minute setae, VIII with one of these pairs much longer, stout and capitate.

**Measurements** (holotype female in microns). Body length 1400. Head, length 125; width 150; postocular setae 15. Pronotum, length 95; width 210; setae am, aa and ml all 5, epim 20, pa 15. Fore wing length 500. Tergite VI lateral setae 25; tergite IX major setae 30. Tube length 85. Sternite II marginal setae 5; sternite VIII marginal setae 30. Antennal segments III–VIII length 35, 30, 35, 40, 40, 20.

**Specimens studied**: Holotype female macroptera, **Australian Capital Territory**, Casuarina Sands, from Epacrid with lichen, 13.viii.1995 (LAM 2791).

Paratypes: Two female macropterae taken with holotype.

**Comments**. This species is here described in *Sophiothrips* with some hesitation, because the maxillary stylets are more deeply retracted into the head capsule than any other member of this genus, the mesoeusternum is eroded medially, the sternal posteromarginal setae are unusually small, and antennal segment VI is not enlarged. However, the head shape and chaetotaxy, and the short tube, are typical of this genus.

***Sophiothrips darwini* sp.n.**

(Figs 2, 9, 15, 19, 23)

*Male aptera*: Bicoloured; head yellow, also tergites II–III and VIII–IX, tube brownish-yellow; tarsi all yellow, fore legs pale, mid and hind legs bicoloured; antennal segments I–III yellow, IV–VI yellow at base, VII–VIII brown.

Head wider than long, without sculpture except on posterior third; ocellar and lateral postocular setae bluntly capitate, two pairs of minor postocular setae; stylets not retracted into head capsule; major male with weak tubercle on ventral surface of head medially between posterior margins of eyes. Antennae (Fig. 9), segment II with pair of blunt setae at dorsal apex, III with one sensorium and a small sharp-edged ring near base, IV–V each with 2 sensoria, VI longer than VII+VIII, with 3 sensoria. Pronotum almost without sculpture, all 5 pairs of major setae present but small and bluntly pointed. Fore femora of major male swollen, tarsal tooth large. Meso and metanotum strongly transverse, metanotum weakly reticulate with one pair of major setae. Prosternal basantra present, mesopresternum represented by pair of slender lateral triangles (Fig. 19); mesoeusternum entire. Pelta weakly reticulate, extending almost fully across tergite II (Fig. 15); tergites weakly reticulate; IX with setae S1 and S2 bluntly pointed, S3 long and finely acute; posterior margin of IX with prominent tubercle (Fig. 23). Sternites without specialized reticulation, median pair of marginal setae on II and III as long as median length of these sternites.

**Measurements** (holotype male in microns). Body length 1230. Head, length 90; width 120; ocellar setae 20; postocular setae 25. Pronotum, length 175; width 200; major setae am 15, aa 20, ml 25, epim 30, pa 30. Metanotal major setae 20. Tergite VI posteroangular setae 25; tergite IX setae S1 65, S2 20, S3 120. Tube length 100. Sternite II marginal setae S1 65; sternite VIII marginal setae S1 75. Antennal segments III–VIII length 40, 35, 35, 45, 25, 15.

*Female aptera*: Similar in colour and structure to small male aptera except, fore tarsal tooth small and hooked; prosternal basantra weak.

Measurements (paratype female in microns). Body length 1280. Head, length 100; width 135. Tergite IX setae S1 55, S2 60, S3 75. Tube length 90.

*Female macroptera*: Similar to female aptera but head almost brown, cephalic setae shorter (Fig. 2); prosternal basantra present; fore wing parallel-sided, without duplicated cilia; pelta with slender lateral wings; tergites III–VII each with one pair of sigmoid wing-retaining setae.

**Measurements** (paratype female macroptera in microns). Body length 1420. Head, length 115; width 155. Fore wing length 500. Tube length 115.

**Specimens studied**: Holotype male aptera, **Northern Territory**, Darwin, Charles Darwin N.P., from dead branch of *Planchonia careya* (Lecythidaceae) with ?*Stereum* fungus, 1.v.2014 (LAM 5968).

Paratypes: **Northern Territory**, 2 female macropterae, 4 female apterae, 4 male apterae, taken with holotype; Darwin, East Point, 1 female macroptera, 3 female apterae, 5 male apterae from dead branches, 5.v.2014; Darwin, Holmes Jungle, 1 female apterae, from barkspray of fallen tree, 8.v.2014; Humpty Doo, 8 female macropterae, 1 female aptera, from dead stringy bark, 24.xii.1996, same locality, 1 female macroptera, 15.v.1999. **Western Australia**, Kununnura Gorge, 2 male and 4 female apterae, 1 female macroptera, from dead twigs, 23.ii.2005; Kununnura, Frank Wise Institute, 8 male and 8 female apterae, 2 female macropterae, from dead twigs, 24.ii.2005; Kununnura, 1 female aptera from dead wood, 20.ix.2009.

**Comments**. This species is similar in structure to *typicus* from India (Mound 1977), but that has abdominal segments II–VII almost entirely yellow.

### *Sophiothrips duvali* Mound & Walker, 1982

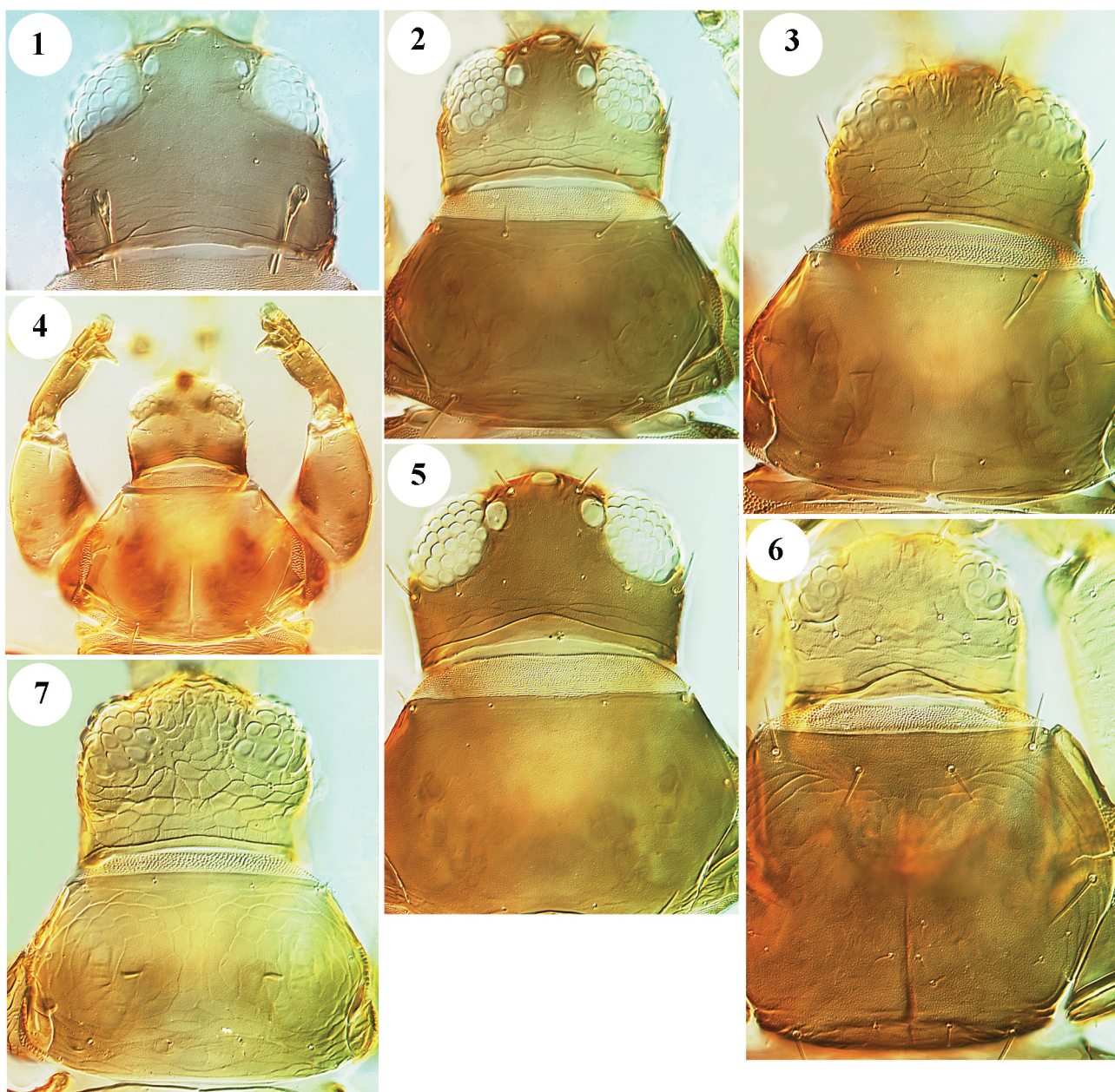
This is one of two uniformly brown species known only from New Zealand. It is closely related to *aleurodisci*, and has been found only in North Island.

### *Sophiothrips greensladei* Mound & Walker, 1982

(Figs 3, 10, 24)

The original description was based on three females from Australia near Brisbane, with two non-paratype females from Canberra and Kangaroo Island as well as two females from North Island, New Zealand. The holotype is the only known macropterous individual, but one of the paratype apterae, also the non-paratype female from Canberra, are both discussed below under the new species *postlei*. Apterae of *greensladei* have been found widely in eastern Australia, between Cape Tribulation in northern Queensland and Tasmania, and also on Lord Howe Island. The males are similar to the females in colour and structure, with no fore tarsal tooth nor any other obvious secondary sexual character. In apterae, the pronotal posteroangular setae are minute, no longer than the pronotal discal setae (Fig. 3), both sexes have no fore tarsal tooth, and the pelta extends fully across the anterior margin of tergite II. The basal stem of antennal segment III is long and slender (Fig. 10), and sub-equal in length to the apical swollen part. The metanotum generally lacks sculpture or is only weakly reticulate, and tergite IX setal pair S1 is almost as long as the basal width of the tube. The tube lacks any reticulation, but has weakly defined longitudinal furrows (Fig. 24).





**FIGURES 1–7.** *Sophiothrips* from Australia. Heads and pronota: (1) *canberrae* sp.n.; (2) *darwini* sp.n.; (3) *greensladei*; (4) *martinae* sp.n.; (5) *mongae* sp.n.; (6) *placodes* sp.n.; (7) *postlei* sp.n.

***Sophiothrips martinae* sp.n.**

(Figs 4, 11, 16, 21, 28, 29)

*Male aptera*: Generally yellow but patterned with many light brown markings (Fig. 4); head with posterior margin brown, also two brown spots between eyes and darker brown on interantennal region ventrally; antennal segment I yellow, also base of II–VI, rest brown; pronotum with two brown areas; all coxae, tibiae and tarsi brown, femora bicoloured; abdominal segments V–VII light brown medially; tube with apical ring dark; all setae pale.

Head wider than long, almost without sculpture except near posterior margin, with 2 pairs of postocular setae, one pair of ocellar setae; stylets not extending into head capsule; large male with small dark horn ventrally between bases of antennae. Antennal segment VIII broadly joined to VII (Fig. 11); segments III and IV each with 2 sensoria but these vary in length, V and VI each with 3 longer sensoria. Pronotum almost without sculpture, median apodeme weak; am setae minute, aa shorter than ml, epim and pa setae; notopleural sutures complete. Large males

with fore femora swollen and fore tarsal tooth large (Fig. 4). Meso and metanota transverse, metanotum with one pair of prominent acute setae. Prosternal basantra faintly indicated, mesopresternum very slender, mesoeusternum entire. Pelta shape irregularly transverse (Fig. 16), campaniform sensilla present; tergites with weak transverse sculpture, lateral pair of setae on II–VII short and stout; tergite IX with no dorsal marginal tubercle (Fig. 29), setae shorter than tube, anal setae short. Sternites V–VI with paired anterolateral areas of faint specialized reticulation (Fig. 21).

**Measurements** (holotype male in microns). Body length 1200. Head, length 110; width 140; ocellar setae 20; lateral postocular setae 15. Pronotum, length 175; width 235; major setae am 5, aa 20, ml 50, epim 40, pa 50. Metanotal major setae 25. Tergite VI posteroangular setae 30; tergite IX setae S1 55, S2 25, S3 60. Tube length 85. Sternite II marginal setae S1 25; sternite VIII marginal setae S1 40. Antennal segments III–VIII length 45, 40, 25, 30, 30, 20.

*Female aptera*: closely similar to male in colour and structure, head without ventral horn; fore tarsal tooth small; tergite IX setae S2 small and weak, and shorter than the pairs of intermediate (iS) tergal marginal setae (Fig. 28); sternites without specialized reticulate areas.

**Measurements** (paratype female in microns). Body length 1170. Head, length 100; width 155. Pronotum, length 150; width 250; major setae epim 25, pa 25. Metanotal major setae 20. Tergite IX setae S1 45, iS 15, S2 10, S3 35. Tube length 85. Sternite II marginal setae S1 15; sternite VIII marginal setae S1 35.

**Specimens studied**: Holotype male, **Norfolk Island**, Palm Glen Track, dead *Citrus jambhiri*, 12.vii.2013 (Alice Wells).

Paratypes, all Norfolk Island, from dead branches: 2 males, 3 females taken with holotype; same locality, 1 male, 3 females, 23.xii.2012; Bird Rock Track, 3 males, 5 females, 25.xii.2012; Selwyn Pine Road, 1 male, 1 female, 24.xii.2012, and 1 male, 1 female, 24.xii.2013; 100 Acre Reserve, 1 male, 1 female, 25.xii.2013; Mt Pitt, 1 male, 1 female, 22.xii.2013; Mission Road rainforest, 2 females, 23.xii.2013.

**Comments**. In structure this species is closely similar to the New Zealand species, *aleurodisci*, but is startlingly different in being sharply bicoloured instead of uniformly brown. Moreover, the short setae S2 on tergite IX of females is a condition that is not recorded from any other species in this genus, and is certainly different from the condition in *aleurodisci*. The name *martinae* recognizes the contributions made by Mera Martin to the success of insect surveying studies on Norfolk Island.

### *Sophiothrips mongae* sp.n.

(Figs 5, 17, 22, 25)

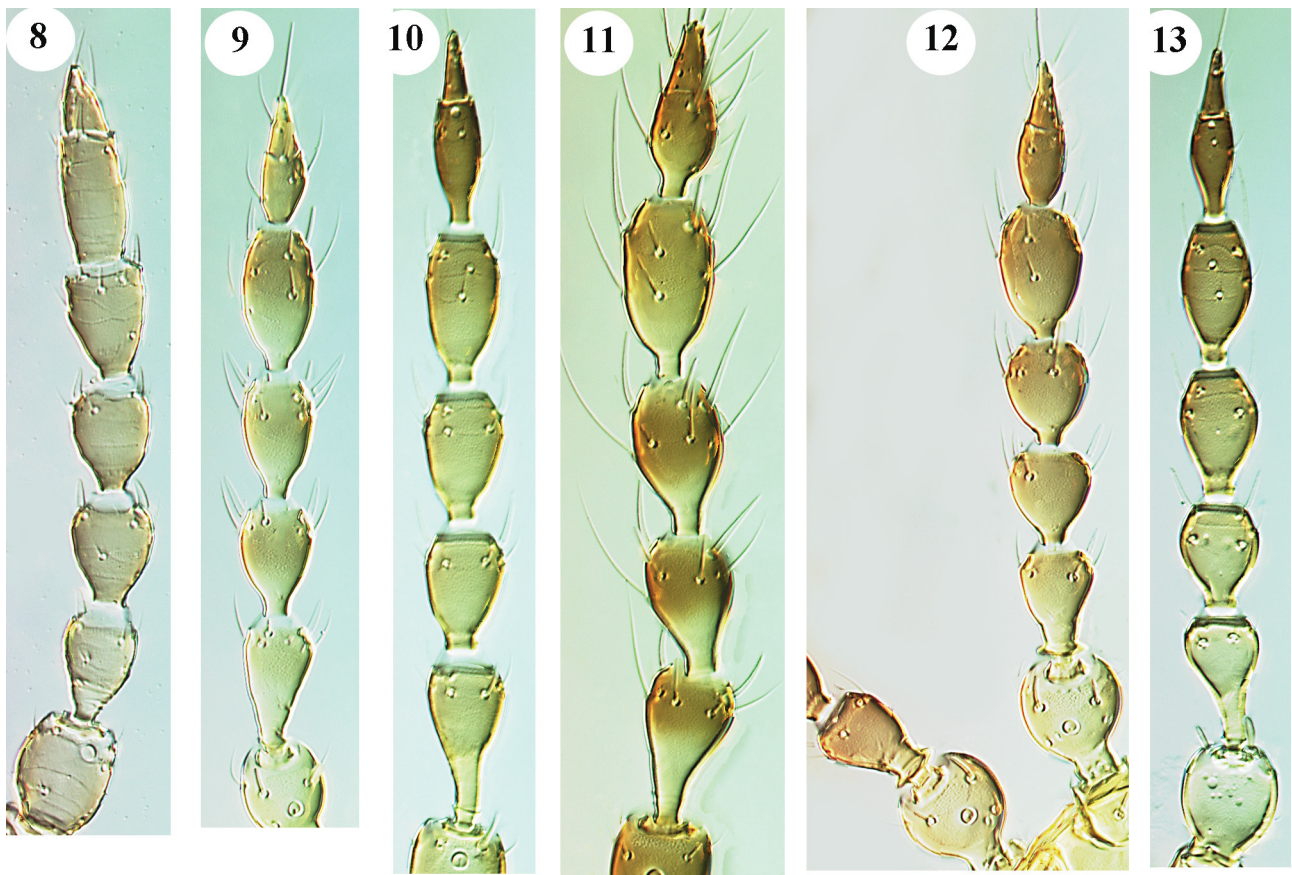
*Female macroptera*: Weakly bicoloured; mainly brown, but abdominal segments II–IV yellowish, tube golden; coxae brown, tarsi and fore tibiae yellow, mid and hind femora and tibiae brown with apices yellow; antennal segments I–III yellow, IV–VI brown in apical half, VII–VIII brown; fore wing shaded at base and on distal half. Head wider than long, without sculpture except near posterior margin; ocellar and lateral postocular setae bluntly pointed, two pairs of minor postocular setae (Fig. 5); stylets not retracted into head capsule; antennal segment II with pair of blunt setae at dorsal apex; III with one sensorium also several small transverse ridges near base, IV with 2 stout sensoria, V–VI each with 3 sensoria, VI almost as long as VII+VIII. Pronotum smooth, am setae minute (Fig. 5). Mesonotal lateral setae minute. Metanotum with no sculpture medially (Fig. 17), two pairs of minor setae on anterior third, one pair of major pointed setae on posterior third. Prosternal basantra weakly developed, mesopresternum slender and transverse; mesoeusternum anterior margin entire; metathoracic sternopleural sutures well-developed. Fore tarsus with small blunt tooth. Fore wing parallel sided, no duplicated cilia. Pelta with slender lateral wings (Fig. 17); tergites III–VII each with one pair of sigmoid wing-retaining setae (Fig. 22); tergite IX major setae long and finely pointed; tube almost parallel-sided with apex sharply constricted (Fig. 25), surface with linear furrows on basal half but reticulate on distal half. Sternites II–III each with median pair of posteromarginal setae longer than length of their sternite.

**Measurements** (holotype female in microns). Body length 1550. Head, length 100; width 170; ocellar setae 20; lateral postocular setae 30. Pronotum, length 150; width 225; major setae am 5, aa 15, ml 15, epim 40, pa 30. Fore wing length 650. Tergite VI posteroangular setae 40; tergite IX setae S1 120, S2 125, S3 120. Tube length 170. Sternite II marginal setae S1 85; sternite VIII marginal setae S1 45. Antennal segments III–VIII length 45, 40, 50, 55, 30, 25.



**Specimen studied:** Holotype female macroptera, New South Wales, Cabbage Tree creek, Monga, from dead branch, 7.xii.1996 (LAM 3066).

**Comments.** This species differs from the other known members of the genus in the shape and larger size of the tube (Fig. 25).



**FIGURES 8–13.** *Sophiothrips* from Australia, antennae. (8) *canberrae* sp.n.; (9) *darwini* sp.n. (10) *greensladei*; (11) *martinae* sp.n.; (12) *placodes* sp.n.; (13) *postlei* sp.n.

***Sophiothrips placodes* sp.n.**

(Figs 6, 12, 18, 26)

*Male aptera:* Bicoloured; head and abdominal segments II and VII yellow, thorax, pelta and tergite VIII brown, III–VI light brown, tube golden with apical band dark grey; antennal segments I–II yellow, III–VIII increasingly brown; tarsi yellow also fore femora and tibiae, but mid and hind femora and tibiae brown with apices yellow. Head wider than long, without sculpture except near posterior margin; ocellar and lateral postocular setae bluntly capitate, two pairs of minor postocular setae (Fig. 6); stylets not retracted into head capsule; major male with small tubercle on ventral surface of head medially between posterior margins of eyes. Antennal segment II with pair of blunt setae at dorsal apex; III with one sensorium and large flattened band with sharp edged ring near base (Fig. 12), IV–VI each with 2 sensoria, VI about as long as VII+VIII. Pronotum with weak sculpture at anterior and posterior, 5 pairs of major setae bluntly capitate, am setae arising submarginally (Fig. 6). Meso and metanotum strongly transverse, metanotum reticulate with one pair of major setae. Fore femora of major male swollen, tarsal tooth large. Prosternal basantra small in major male but absent in minor male, mesopresternum not developed; mesoeusternum anterior margin entire. Pelta extends almost fully across tergite II; tergites weakly reticulate; IX with major setae all bluntly pointed, posterior margin with prominent pointed tubercle (Fig. 26). Sternites without specialized reticulation, median pair of marginal setae at least 3 times as long as discal setae.

**Measurements** (holotype male in microns). Body length 1150. Head, length 85; width 130; ocellar setae 20; lateral postocular setae 25. Pronotum, length 170; width 220; major setae am 20, aa 30, ml 35, epim 30, pa 25.

Metanotal major setae 20. Tergite VI posteroangular setae 30; tergite IX setae S1 50, S2 25, S3 50. Tube length 100. Sternite II marginal setae S1 50; sternite VIII marginal setae S1 55. Antennal segments III–VIII length 40, 30, 35, 45, 25, 20.

*Female aptera*: Similar in colour and structure to minor male but abdominal segment VI as yellow as VII, fore tarsal tooth minute; tergite IX setae S2 as long as S1 and S3.

*Female macroptera*: Similar to female aptera except head almost brown; major setae on head and pronotum shorter; mesopresternum represented by slender transverse sclerite; Metanotum reticulate, with 6 small setae on anterior third and one pair of major setae near posterior margin (Fig. 18); fore wing light brown on distal half, parallel sided, no duplicated cilia; tergites III–VII each with one pair of sigmoid wing-retaining setae.

**Specimens studied**: Holotype male aptera, **Victoria**, Nelson, from bark spraying of live tree, 5.x.2013 (DJT 1687).

Paratypes: 8 female, 1 male apterae taken with holotype. **Queensland**, near Brisbane (?Sunnybank or Ormiston), female macroptera in water trap, 1966.

**Comments**. This species is similar to *S. decorus*, from the Ryukyu Islands of southern Japan, in being sharply bicoloured, in having a large flattened band on the pedicel of the third antennal segment, and in having major males with a tubercle both ventrally on the head and dorsally on tergite IX (Fig. 26). However, abdominal segment II is yellow and VIII is brown, whereas in *decorus* abdominal segments I–IV are dark brown, and VII–IX yellow. Moreover, the flattened band on the third antennal segment is much larger than in *decorus*.

### ***Sophiothrips postlei* sp.n.**

(Figs 7, 13, 27)

*Female aptera*: Mainly yellow with light brown markings; legs yellow, but fore coxae brown; head, thorax yellow and abdominal segments I–V and IX yellow, thorax shaded laterally; tergites VI–VIII light brown, tube golden with apical grey band; antennal segments I–IV yellow, V–VI weakly shaded, VII–VIII light brown.

Head wider than long, dorsal surface extensively reticulate and sculptured (Fig. 7), with no long setae; eyes much smaller ventrally than dorsally. Antennal segment II paired dorsal setae flattened (Fig. 13), III with slender basal pedicel about as long as distal swollen portion, with one small sensorium; IV–VI each with 2 long sensoria. Pronotum faintly reticulate, major setae minute except epimerals. Meso and metanotum reticulate, metanotum without pair of prominent setae. Fore tarsal tooth absent. Prosternal basantra, mesopresternum and metathoracic sternopleural sutures absent; mesoeusternum anterior margin entire. Pelta extending fully across anterior margin of segment II; tergites weakly reticulate, lateral setae minute; tergite IX major setae shorter than width of base of tube, S3 bluntly pointed; tube surface weakly reticulate (Fig. 27).

**Measurements** (holotype female aptera in microns). Body length 1040. Head, length 85; width 125; lateral postocular setae 12. Pronotum, length 110; width 185; epim setae 12. Tergite VI posteroangular setae 12; tergite IX setae S1 25, S2 20, S3 15. Tube length 150. Sternite II marginal setae S1 20; sternite VIII marginal setae S1 10. Antennal segments III–VIII length 45, 35, 40, 48, 35, 20.

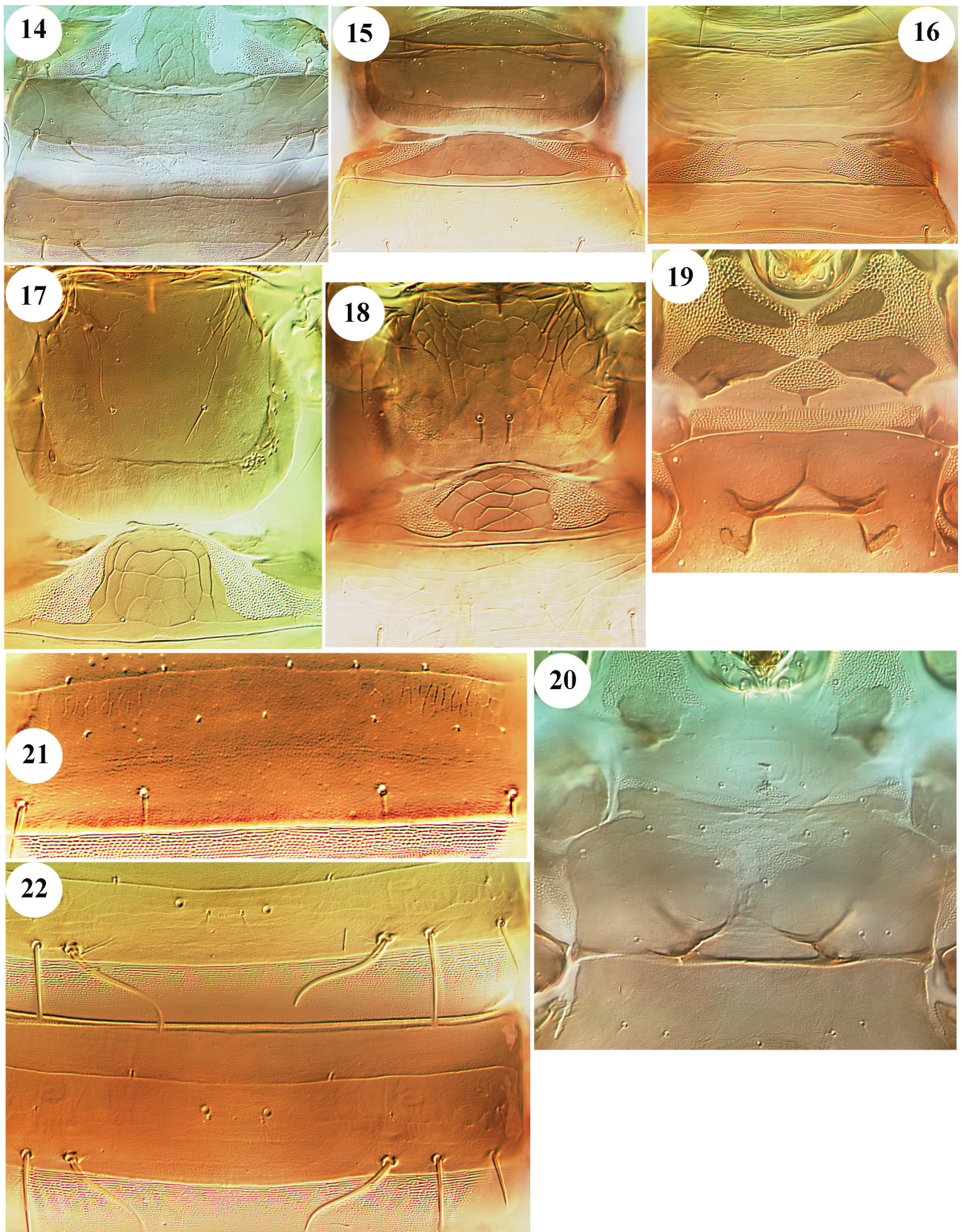
*Male aptera*: Very similar to female in colour and structure, without any obvious secondary sexual characters.

**Specimens studied**: Holotype female, **Western Australia**, Dwellingup, from leaf litter, 28.vii.1981 (A. Postle).

Paratypes: 5 females, 1 male, taken with holotype; **Australian Capital Territory**, Canberra, Black Mt., 1 female in leaf litter, 4.xii.1969. **New South Wales**, Monga Forest, 2 females, 1 male from grass and leaves, 27.viii.1995.

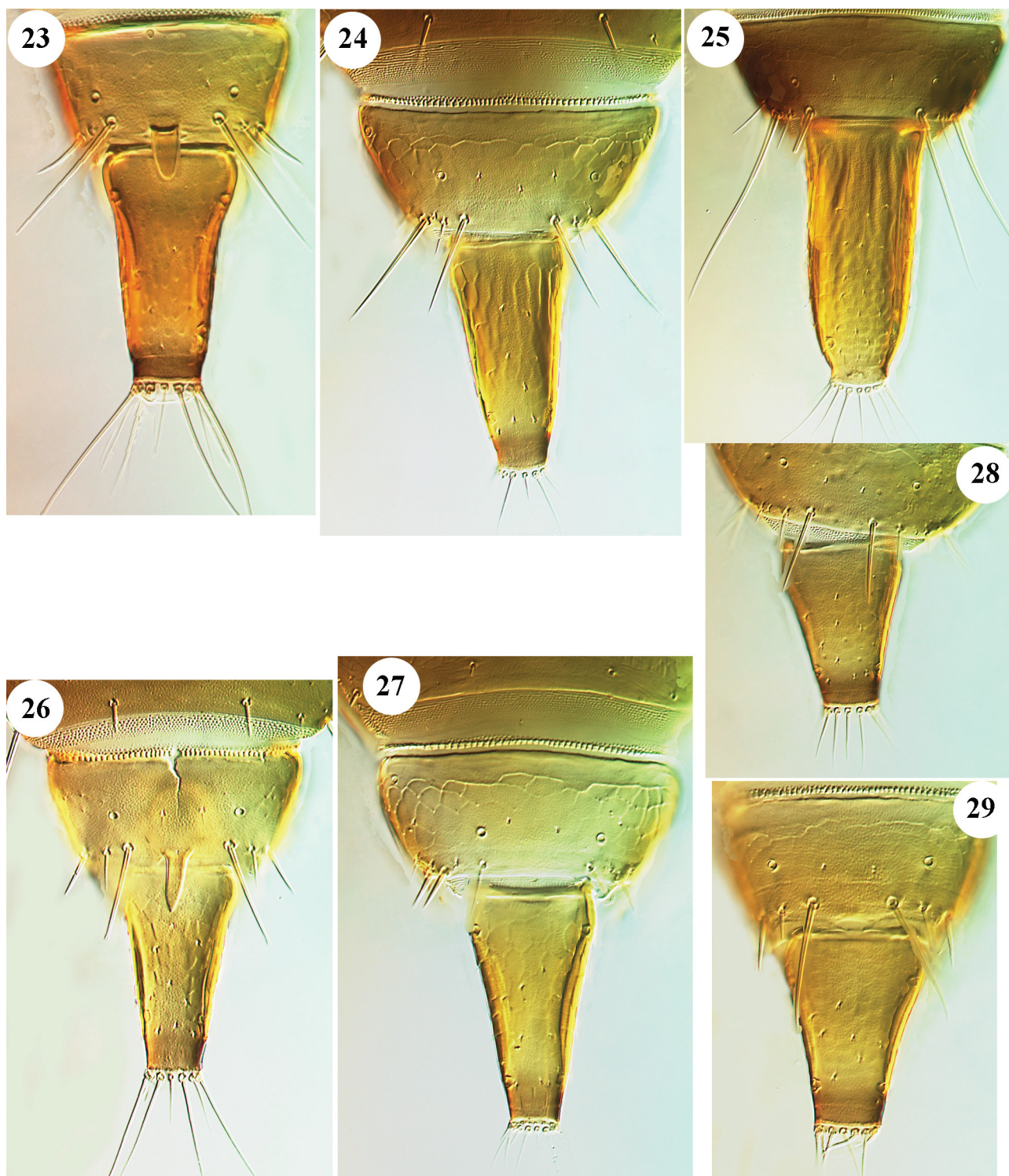
**Comments**. This species is closely related to *greensladei* with a similar rather slender base to antennal segment III. However, the setae on the second antennal segment are flattened, the head and thorax more extensively reticulate, and the setae on the pronotum, laterally on the tergites, and on tergite IX are all considerably shorter.





**FIGURES 14–22.** *Sophiothrips* from Australia. (14) *canberrae* sp.n., tergites I–III. Metanotum and pelta, 15–18: (15) *darwini* sp.n.; (16) *martinae* sp.n.; (17) *mongae* sp.n.; (18) *placodes* sp.n. Pro and mesosternites 19–20: (19) *darwini* sp.n.; (20) *canberrae* sp.n. (21) *martinae* sp.n. male sternite VI; (22) *mongae* sp.n. tergites V–VI.





**FIGURES 23–29.** *Sophiothrips* from Australia, tergite IX and tube. (23) *darwini* sp.n.; (24) *greensladei*; (25) *mongae* sp.n.; (26) *placodes* sp.n.; (27) *postlei* sp.n.; (28) *martinae* sp.n. female; (29) *martinae* sp.n. male.

### Acknowledgements

This paper was produced as part of a programme studying the diversity of Australian fungus-feeding Thysanoptera that was supported in part by a BushBlitz Research Grant from Australian Biological Resources Study, Canberra.

## References

- Dang, L.-H., Mound, L.A. & Qiao, G.-X. (2014) Conspectus of the Phlaeothripinae genera from China and Southeast Asia (Thysanoptera, Phlaeothripidae). *Zootaxa*, 3807 (1), 1–82.  
<http://dx.doi.org/10.11646/zootaxa.3807.1.1>
- Hood, J.D. (1934) New Thysanoptera from Panama. *Journal of the New York Entomological Society*, 41, 407–434.
- Mound, L.A. (1977) Leaf-litter Thysanoptera of the sub-tribe Williamsiellina (Phlaeothripidae). *Bulletin of the British Museum (Natural History). Entomology*, 36, 171–192.
- Mound, L.A. & Walker, A.K. (1982) Evolutionary significance and generic classification of the Williamsiellina (Thysanoptera: Phlaeothripidae). *Systematic Entomology*, 7, 347–355.  
<http://dx.doi.org/10.1111/j.1365-3113.1982.tb00451.x>
- Okajima, S. (2006). *The Insects of Japan. Volume 2. The suborder Tubulifera (Thysanoptera)*. Fukuoka: Touka Shobo Co. Ltd. 1–720 pp.
- ThripsWiki (2014) ThripsWiki—providing information on the World's thrips. Available from: [http://thrips.info/wiki/Main\\_Page](http://thrips.info/wiki/Main_Page) (accessed 13 August 2014)